DOCUMENT RESUME

ED 087 898 CE 000 989

AUTHOR	Peterson, Roland L.
TITLE	Review and Synthesis of Research in Vocational Teacher Education.
INSTITUTION	Ohio State Univ., Columbus. Center for Vocational and Technical Education.
SPONS AGENCY	National Inst. of Education (DHEW), Washington, D.C.
REPORT NO	IS-101
PUB DATE	73
NOTE	51p.
AVAILABLE FROM	Product Utilization, The Center for Vocational and Technical Education, The Ohio State University, 1960 Kenney Road, Columbus, Ohio 43210 ($3.50)
EDRS PRICE	MF-$0.75 HC-$3.15
DESCRIPTORS	*Educational Research; Inservice Education; *Literature Reviews; Preservice Education; *Program Evaluation; *Teacher Education; Teacher Guidance; Teacher Recruitment; *Vocational Education Teachers

ABSTRACT

The document reviews research reports, journal articles, abstracts, and other publications that are primarily research efforts in vocational teacher education, with the hope that areas of weakness and potential for future research will be revealed. Three areas are focused upon: (1) competencies required of vocational teachers, including sources and recruitment; (2) teacher preparation programs for vocational teachers, including preservice and inservice programs and guidance for prospective teachers; and (3) evaluation of vocational teacher education programs. Each section includes a brief summary, conclusions and implications section and a final summary reemphasizes the key findings of the whole review. Nine crucial areas are identified which merit further attention from researchers interested in vocational teacher education. A fourteen-page bibliography completes the document. (SA)

ED 087898

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REVIEW AND SYNTHESIS OF RESEARCH IN VOCATIONAL TEACHER EDUCATION

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REVIEW AND SYNTHESIS OF RESEARCH IN VOCATIONAL TEACHER EDUCATION

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1973

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FOREWORD

Increasing attention is being directed toward providing vocational teachers with the appropriate skills and experiences to properly equip students to secure entry employment. The author has made an extensive review of the literature relating to vocational teacher preparation and draws numerous conclusions and implications from the findings.

Consideration is given to the competencies required of vocational teachers, as well as the related critical dimensions of identifying sources of teachers and recruitment techniques. Research relating to preservice and in-service preparation programs is reviewed, evaluation of vocational teacher education programs is addressed, and implications for further research activities are identified.

The profession is indebted to Roland L. Peterson for his scholarship in the preparation of this report. Recognition is also due W. John Schill, University of Washington; and Alan A. Kahler, Iowa State University for their critical review of the manuscript prior to final revision and publication. Wesley E. Budke, Assistant Director for Information Utilization, The Center, coordinated the publication's development, Alice J. Brown and Paula K. Kurth provided the technical editing.

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INTRODUCTION

A review and synthesis of research in vocational and technical teacher education for the years 1962-1967 was completed by Moss in 1967. He noted that the 1962 issue of *Review of Educational Research* on "Vocational, Technical and Practical Arts Education" listed 10 studies on vocational and technical teacher education; consequently, he chose 1962 as a base for his review. The review by Moss (1967) recognized the impact of research in the general field of teacher education and cited numerous references from the broad areas in which aspects of teacher education were being researched. Since the 1962 and 1967 reviews, considerable research has emerged in the area of vocational teacher education.

When considering the limitations of this review, an attempt has been made to review research reports, journal articles, abstracts and other publications that were primarily research efforts in vocational teacher education. In preparing this review it seemed appropriate to examine studies from the 1967 date to the present time, 1973.

Although, ideas and developments in one aspect of teacher education are extremely useful in another area, this review attempts to reflect only the research in vocational teacher education. This limitation has the advantage that a review of vocational teacher education may reveal areas of weakness and potential for future research.

One of the difficulties encountered in this review is that a number of reports from abstracts appear to be based on a research effort; however, the complete report frequently revealed that they were based largely upon the opinions and ideas of teacher educators or other persons interested in vocational teacher education, or were projects that had been conducted with regard to the development of teaching materials rather than particular findings.

The review has included extensive use of an ERIC search involving the RIE and CIJE files. Other areas of review included *Dissertation Abstracts* as well as past review and synthesis publications in the vocational service areas. Consequently, there may be some duplication of studies as they may have appeared in previous reviews in the service areas. This review attempts to center on the entire area of vocational teacher education and, unfortunately, some significant studies may not have been included.

Leaders in vocational education are frequently frustrated and perplexed over a lack of well-prepared vocational teachers. In remarks to a statewide meeting of vocational teacher educators in Minnesota, Johnson (1972), a state supervisor, severely criticized vocational teacher educators for not providing a sufficient number of qualified teachers. It is the

reviewers contention, that this situation occurs in every state on a regular basis. Ironically, in a period of history when requirements for general teacher certification are becoming more stringent as suggested by Houston (1972), it appears that vocational education is continuing to endorse emergency plans for the employment of teachers with very minimal or no pedagogical preparation as may be evidenced in conversations with supervisory staff personnel in nearly every state. Consequently it seems reasonable to assume that an assessment on the state-of-the-art of research in vocational teacher education is a relevant undertaking and may provide valuable background for further research by teacher educators.

In the review by Moss (1967), a unique multi-dimensional paradigm was utilized to classify the research effort. This review attempts to maintain the basic categories used by Moss (1967), however, the multi-dimensional effort was not utilized due to the extreme difficulty encountered in determining if a particular study was solely research or if it included development, pilot demonstration and dissemination dimensions or levels. Consequently, this review focuses on competencies of teachers, sources of teachers, recruitment of teachers, teacher preparation both preservice and in-service, advising and guiding vocational teachers, and evaluation of teacher education programs and products. In some instances studies included in the review encompassed more than one of the above categories.

Miller (1967) reported on a model which was formulated as a result of a conference to investigate problems impeding the growth of technical education. He noted that many problems focused on teacher education in the areas of selection and recruitment of teachers, training programs and evaluation of teaching. Those same areas held high priority for research efforts. Courtney (1968) prepared a document to generate a rationale and a design for planning a common curriculum in vocational teacher education. He suggested that some crucial areas of research were to (1) determine the content of professional education needs for teachers of vocational subjects, (2) determine competency levels, and (3) extract the common core of subject matter for professional education needs. Beasley and Smiley (1971) stated that new avenues and arrangements must be found for improving the occupational competency of teachers in order to meet the demand for skilled and recently trained workers. Bottoms and Murphy (1967) reported on a conference designed to identify research priorities for vocational teacher education. They also suggested research should investigate academic background and occupational experience as related to teacher competencies, as well as determine reasons for the continuing loss of teachers to industry.

In Figure 1, a paradigm is presented outlining the critical categories of vocational teacher education. The paradigm was formulated, based on the preceding citations, to serve as a base point and a guide for the 1967-1973 review and synthesis of research in vocational teacher education. Following the framework established by Moss (1967) the paradigm encompasses three broad areas of vocational teacher preparation. The first category focuses on a

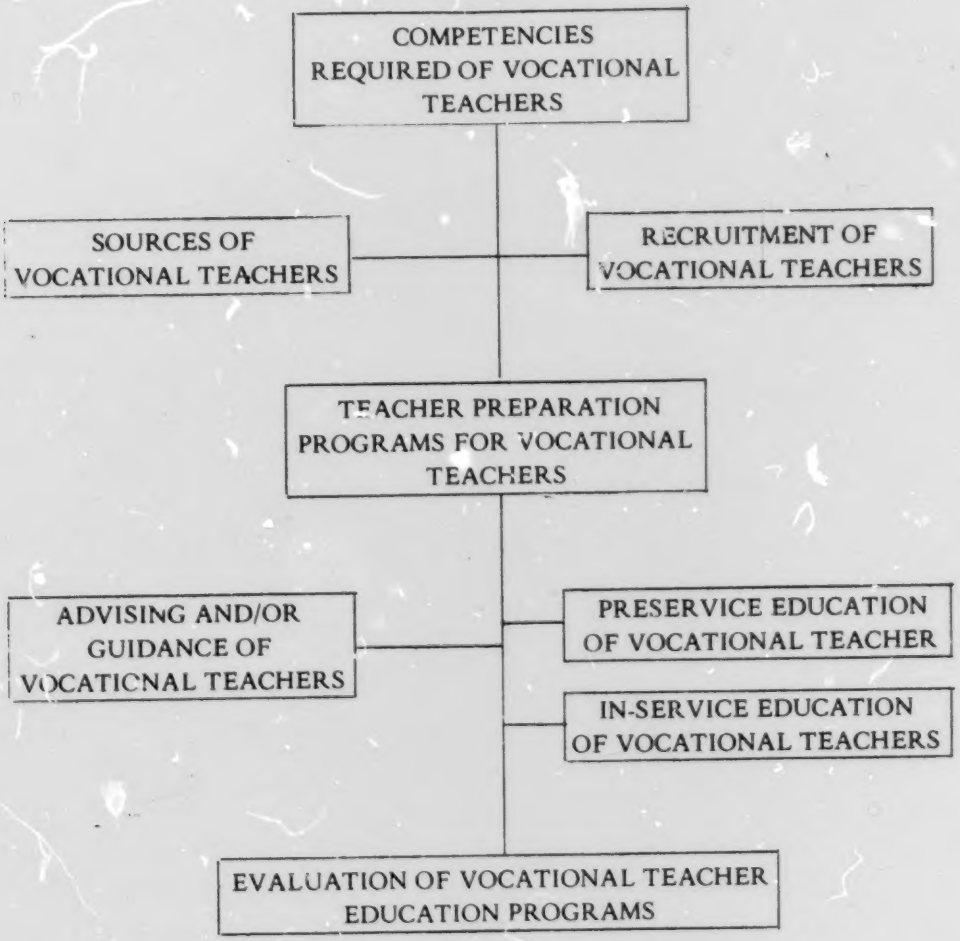
COMPETENCIES REQUIRED OF VOCATIONAL TEACHERS
SOURCES OF VOCATIONAL TEACHERS
RECRUITMENT OF VOCATIONAL TEACHERS
TEACHER PREPARATION PROGRAMS FOR VOCATIONAL TEACHERS
ADVISING AND/OR GUIDANCE OF VOCATICNAL TEACHERS
PRESERVICE EDUCATION OF VOCATIONAL TEACHER
IN-SERVICE EDUCATION OF VOCATIONAL TEACHERS
EVALUATION OF VOCATIONAL TEACHER EDUCATION PROGRAMS

Figure 1. Research in Vocational Teacher Education

review of the competencies required of vocational teachers. Once the competency areas have been established, the areas of sources for teachers and recruitment procedures and techniques become a critical dimension in a teacher education program

The second major category is preparation phase and the three key dimensions to this aspect are the preservice, in-service and the advising and guiding of vocational teachers. In this category it is not the purpose of the review to establish the point of whether or not vocational teachers function as guidance counselors but rather to examine the literature to analyze how teacher educators advise and guide students through the teacher preparation program. It seems with students entering vocational teacher education programs as skilled workers from business and industry, from junior and technical colleges, or as typical college freshmen, the guidance and advising function of teacher educators becomes a critical dimension.

The third major category of the paradigm is the evaluation of vocational teacher education programs.

COMPETENCIES REQUIRED OF VOCATIONAL TEACHERS

One of the crucial problems facing teacher educators is determination of the competencies which should be required of vocational teachers. The pedagogy required of vocational teachers, as well as subject matter competencies needed by teachers, are areas that must be constantly updated. In a period of continual change in the competencies required of workers in business and industry, it is possible that teachers acquire experiences in obsolete teacher education programs. Consequently, teacher educators must direct their efforts toward identifying the key competencies required of vocational teachers.

A number of significant studies have been completed which provide a basis for competency-based teacher education in vocational education. Cotrell (1971) launched a study to determine the performance requirements common for teachers in a majority of vocational services and those unique to one or more of the vocational service areas. An initial list of 237 performance criteria resulted from the introspection and interview techniques. These criteria were evaluated by a task force of teacher educators, state supervisors, and master educators representing the seven vocational disciplines in 19 states. The 237 performance criteria were sent to 700 teachers to supplement and determine the critical incidence of each criteria. Cotrell found that experienced teachers indicated skills which were common to all areas of vocational education, whereas, beginning teachers indicated skills which were unique to each area.

In the area of agriculture, Nattress (1967); Kruskop (1966); and Mitschele (1965) each studied competencies needed by vocational agriculture teachers in the areas of crops and soil science, farm management, and animal science. Even though two studies were made before 1967, it seemed the results had meaningful applications in the review. In each study, teachers indicated that they needed more competency than they possessed on nearly all competencies evaluated.

Gianini and Kurth (1967) conducted a study to determine whether the professional competency of technical education teachers was a function of one or several educational background variables. They found that: (1) teachers who hold academic degrees in the speciality area scored significantly higher on the comprehensive examination; (2) higher sociometric scores and cooperativeness ratings were generally achieved by those with no experience other than teaching; (3) high cooperativeness ratings were generally achieved by those who received their technical degree in the northeastern states; and (4) no significant differences exist based on colleges attended, time lapse between degree and certification, or the number of years employed in other occupations.

Crawford (1967) attempted to determine the learning experiences which should be included in a distributive education program. Crawford identified 96 items that should be included in a distributive teacher education curriculum. Rudisill (1969) surveyed 202 institutions in the nation preparing teachers for industrial arts programs. (Although industrial arts programs technically are not considered vocational education by all vocational educators, the study has implications for vocational teacher education). Rudisill found that the basic teacher preparation programs across the country had not changed substantially in the past 75 years. He reported that the existing structure of the programs studied continue to emphasize broad areas rather than components of industry or technology. A need for clarification of the avocational crafts in teacher education programs was indicated. The study also pointed out that teacher education programs tended to offer courses in only one or two technical areas.

Feck (1971) conducted a study to assist teacher educators in planning professional programs for technical post-secondary teachers of agriculture. He found that numerous technical post-secondary teachers had attained a bachelor of science degree in a specialized subject area and a masters degree in agricultural education. Feck also found these teachers had important guidance responsibilities, taught at the technical level for an average of five years, and had an average of eight years of industrial experience. Of the 117 competencies studied, those in planning for instruction, teaching, and public and human relations rated highest among their priorities.

Spanziani (1972) focused on Bloom's taxonomy to select competencies which would assist in the structuring of an empirically based vocational teacher preparatory program by determining the hierarchical levels of common professional education competencies needed by community college and secondary school vocational instructors. There were 99 professional education competencies judged by teachers. Approximately 80 percent of the respondents judged the hierarchical levels of competency at the application level and higher. Competencies in "Instructional Process" and "Preparation for Instruction" were considered the important competencies needed by vocational teachers.

In a two phase study, Heitzman (1968) determined curricula for the occupational skills teacher. In the first phase of the study, a conference was held to determine how industrial education fits into the rehabilitation process of handicapped persons. The second phase of the study gathered additional information about what kinds of competencies and the level of competence required of each occupational teacher. Heitzman identified 57 competency items which were developed by interviewing teachers employed in rehabilitation centers. Heitzman recommended that teachers have (1) a bachelors degree in industrial arts, (2) a basic course in counseling, (3) a basic course in educating handicapped children, (4) work experience and understanding of industry, (5) courses that include the special problems encountered by a teacher of occupational skills, and (6) a series of clinical and practicum experiences specifically disigned for the prospective teacher of occupational skills.

A study to determine the common training requirements of secondary-level vocational teachers was carried out by Courtney and Halfin (1969). A factor analysis was made of responses to 40 items rated on a Likert-type scale from 40 randomly selected vocational teachers representing the states of Pennsylvania, Iowa, North Carolina, and New Jersey. Teachers included in the study were from the subject matter areas of agriculture, home economics, trade and industry, distributive education and business education. The findings indicate that some commonalities within the five disciplines represent a possibility for a common core of training experiences within the broad based vocational teacher education programs.

In a doctoral study, Miller (1971) attempted to identify 75 functional competencies needed by instructors in contemporary industrial arts programs. After surveying educators across the country, Miller found that (1) close agreement existed between educators and supervisors concerning the importance of functional competencies, (2) personal qualities and behavioral characteristics generally are rated most important, and (3) competencies in teaching methods and techniques are rated more important than competencies in course content and related information. He concluded that there should be valid methods and techniques devised to help screen prospective industrial arts instructors to determine if they possess these characteristics and personal qualities.

In another doctoral study, Andreyka (1969) examined technical instructors' attitudes toward their educational tasks. He found full-time instructors were able to more accurately identify significant tasks and that several areas of competence were important for technical teaching.

Weber (1970) conducted a doctoral study to identify, classify, evaluate, and state in behavioral language the job-related activities of a teacher-coordinator. In general, respondents were asked a series of questions related to the appropriateness of various teaching tasks. Among recommendations of the study were that teacher-coordinator preservice and in-service programs based on performance objectives in systems of education be planned.

Campbell (1968) studied the preparation of vocational-technical teachers to work with dropout-prone youths. Two findings that seemed to have real implications for teacher education were that (1) teaching methods actively involving dropout-prone students must be utilized, and (2) negative teacher responses cause detriments in desirable student behavior.

Conclusions and Implications. In reviewing this section on vocational teacher competencies, some conclusions and implications can be drawn. It is clearly evident that vocational teacher education has made progress in identifying competencies of vocational teachers. Studies have touched the pedagogical dimensions and the technical subject matter areas. Most of the competency directed studies have utilized teachers as a source for supplying the essential competencies. In some areas of vocational teacher education, technical competencies have also been identified and their relative importance has been assessed. Although each study has made a contribution to its specific aspect of vocational teacher education, the Cotrell (1971) and the Courtney and Halfin (1969) studies in which 237 and 130 performance or competency areas were identified, are becoming real benchmarks for future developments. The areas identified by Cotrell are currently being organized into teaching modules in the states of Oregon and Missouri. It seems apparent that these competency areas have general as well as specific applications to all vocational teacher preparation programs. General agreement by teacher educators on the type of competency areas identified may vary from one vocational field to another but many commonalities exist as well as competencies unique to a particular field. Progress on the identification of competencies for each aspect of vocational teacher education is essential and must continue. The technical competencies needed by teachers for each vocational area seems to be the area receiving the least amount of research attention at the present time. Consequently, it appears that research efforts in identifying competencies should be continued in both the teaching pedagogy and the technical competencies for each vocational area.

Sources and Recruitment of Vocational Teachers

Since the source of teachers and recruitment practices categories of the paradigm did not yield a large number of studies, and because they are quite similar, both will be treated in the same section of the review.

How may potential teachers be attracted to the fields of vocational education? According to Woodin (1972) and Hensel (1967a), and contrary to popular thinking, a shortage of teachers continually exists in several areas of vocational education. Locating potential teachers has become a most critical problem for vocational educators in some states. Houston (1972) indicated a trend developing in teacher certification which implies mandatory competency or performance oriented teachers. This trend seems to imply advanced college degree work in educational pedagogy as well as occupational competency. For vocational educators the real dilemma lies in being able to determine where priorities for teacher competence should be placed.

Where are potential teachers located? The traditional route of recruiting students graduating from high schools, who matriculate on to college and/or universities for their teacher preparation apparently does not produce a sufficient number of vocational teachers.

Hensel (1967b) studied 1,152 enlisted men separating from military service as a potential source of vocational teachers. His study included a relatively equal number of army, navy, and air force personnel who had some occupational experience. Twenty seven percent of those studied were willing to take one or more years of additional training to become qualified teachers and nine percent of those willing were considered to be outstanding prospects.

House (1970) compared and contrasted the work cycle and occupational mobility of persons who have become or aspire to be vocational skill subject teachers. She found that a vocational teacher is not a typical "skilled worker." House reported that the influence of the father as a reference person diminished after the first job. Not until the individual became a teacher, which represented a significant gain in status, did the individual attain a status which exceeded that of his wife or oldest brother. In all aspects, the preservice dropout (or the student who leaves a teacher preparation program before qualifying for a teaching position) compared favorably with the trade and industrial teacher on the job. Consequently House concluded that individuals preparing for teaching should be encouraged to (1) join professional organizations, (2) be actively followed and encouraged on a regular basis, and (3) be sponsored by a local school district as a means to prevent them from dropping out of teacher education programs. She contended that preservice dropout represented a loss to vocational education.

Runnalls, et al. (1970), reported on a training program which utilized persons retired from industry and the military to teach technical skills they had learned. Although the study was not a bona-fide research report, it revealed another source of teachers. The findings of this report closely paralleled the resulrs of several "pre-1967" studies regarding the qualifications of military personnel for teaching positions.

Hensel (1967a) studied the present supply and demand of vocational and technical education teachers. The study compared the years 1965-1968 with an actual count in 1965 and a projected count for 1968. The subject matter areas studied were, agriculture, business and office, distributive, health occupations, homemaking, technical, and trade and industrial. The study further revealed the greatest needs for high school teachers were as follows:

> Agriculture, 5.3 percent; business and office education, 28 percent; distributive education, 49.2 percent; home economics, 13.7 percent; and trade and industrial education, 43.1 percent. Estimates of needs for post-high school teachers for this period were agriculture 113 percent; business and office education, 37 percent; distributive education, 73.5 percent; health occupations, 40.2 percent; home economics, 66 percent; technical education, 39.7 percent; and trade and industrial education, 23.2 percent.

Studies of the supply and demand for teachers of vocational agriculture on a nationwide basis encompassing every state have been made for a number of years. Woodin (1972) reported that teacher shortages still exist in agricultural education and 120 teachers were needed and were unavailable when school began. A turnover of about 9.7 percent a year continues to pose real problems for agricultural educators nationwide.

In determining the target areas for recruiting teachers, Pasour (1967) analyzed the student population in agricultural education at North Carolina State University. He found that 49.7 percent of the students came from only 18 percent of the counties of that state; those counties had the most vocational agriculture programs. Pasour indicated that distance from home to the university was not a major factor in attracting students into the university but such factors as the parental economic or occupational status may have influenced their attendance and enrollment. He revealed that the tenure of the high school teacher has no impact on the students enrollment into the agricultural education program. He stated that the transfer of students within the university accounted for 47 percent of the agricultural education students.

Huffman (1972) conducted a pilot study to determine the feasibility of incorporating clinical experiences into teacher education programs at three universities—Temple, Southern Illinois University, and Colorado State University—in order to interest more student teachers teaching disadvantaged students. A manual was prepared to serve as a guide for these experiences.

Conclusions and Implications. It seems evident from the literature that research seeking possible sources of teachers has not received much priority. With technological developments continuing at a rapid rate and vocational programs and course offerings being increased, it seems the key barrier to full development is the shortage of qualified teachers. Teacher shortages must result in administrators placing priorities on technical "know-how" rather than on teaching "know-how". Consequently, temporary certification, in some instances, becomes the only possibility an administrator has to secure vocational teachers. Ironically this is contrary to the demanding requirements of accountability and competency-based teacher preparation.

It is imperative that vocational teacher educators explore all sources for potential teachers. The military business and industry, two- and four-year colleges and technical institutes, secondary schools, retirees and homemakers all provide potential sources for teachers.

The studies that seemed to focus on the recruitment category, were extremely limited. They indicated the need for teachers and outlined some ideas for locating potential students. The studies seemed to imply that teachers beget teachers and the identification and recognition of teachers who produce other teachers can provide assistance in recruiting prospective vocational teachers.

TEACHER PREPARATION PROGRAMS FOR VOCATIONAL TEACHERS

The research reported in this category is divided into two sections. The first section contains studies in the preservice dimension of vocational teacher education. (Preservice has been defined in this review as those formal and/or informal, technical and pedagogical experiences of a student prior to employment as a teacher. This generally refers to undergraduate college courses). The second section focuses on studies in the in-service dimension of vocational teacher education. (In-service is defined in this review as those formal and/or informal technical and pedagogical experiences of a student during employment as a teacher. This generally refers to graduate and off-campus courses which may or may not carry graduate credit.)

Since the passage of the 1963 Amendments and subsequent legislation which has provided monies for research in vocational education, it is apparent from a review of the literature that the preservice and in-service aspects of vocational teacher education programs have

received some research attention. Studies reported in this section may have equal applicability to the competency section, however, they are reported here largely because teacher preparation programs have already been developed from the competencies identified in a particular vocational field.

Preservice Education

Peterson's (1972) followup study of a competency or performance based individualized teaching methods course for agricultural education majors, revealed that beginning teachers prepared via a 74 behavioral objective scheme centered around 30 competency or performance areas, performed significantly better as first year teachers than those teachers taught in a traditional manner. Furthermore, the beginning teachers felt more satisfied with their undergraduate preparation program than those prepared in the traditional manner.

Bikkie, et al. (1972) designed a study to individualize a multimedia approach to preparing vocational teacher-coordinators. They identified 225 competencies needed by vocational educators who coordinate a cooporative program. As a result of their study, the packages have been retooled and they are using them effectively in preservice programs and in-service workshops.

Ferguson (1971) reported on emerging teacher education curricular models based on the competency study of Cotrell in which 237 performance requirements were identified. He stated that a study of performance requirements did not support the original theme of common and unique elements for all areas of vocational education.

Hoerner, et al. (1971) studied the effectiveness of preservice workshops for trade and industrial teachers. With a short time to provide the teaching pedagogy to teachers, the study examined types of feedback and micro-teaching to peer groups versus high school students. They found that video feedback was beneficial and high school students could be used in micro-teaching. They further found four to five minute lessons more beneficial than teaching two 10 minute lessons. Chase, et al. (1971) studied the feasibility of micro-supervision using micro-teaching and video feedback in a simulated workshop for teacher educators. The technique involved a teacher educator observing a student and then a video taping of a critique session with the teacher educator and student. This conference was then observed by a master teacher. The study revealed that either individual or group supervisory conference techniques would improve the supervisory skills of preservice teacher educators. Chase reported that micro-supervision should be a helpful technique for developing supervisory skills.

Collofello, et al. (1972) also studied the relative effectiveness of two sources of feedback on teachers in the micro-teaching situation for home economics student teachers. They found that a micro class of high school students was no more effective in providing feedback than a class of college students. Collofello, et al. indicated that college students were more critical of each other's teaching but high school students provided a more realistic experience. Hedges and Woodin (1970) studied the feasibility of using video-tape techniques in preservice teacher education in agriculture. They found that video-tape techniques were feasible for inclusion in a teacher preparation program.

Bass (1972) examined the role of supervising teachers as they work with prospective teachers. He found 105 behavioral objectives which supervising teachers should carry out with student teachers.

Crawford (1969) conducted a study to determine the foundation for a distributive education curriculum for teacher preparation. The study revealed 179 tasks as being critical for distributive education teacher-coordinators. Forty-eight tasks were in teaching, 25 in guidance, 39 in coordination, 29 in public relations, 33 in administration and five in school functions. As a result of this research, a seminar was held to demonstrate the teacher use of the tasks.

Bauer (1971) evaluated current practices in the use of selected instructional media in the teaching of business subjects. He reported that the overhead projector was by far the most popular medium used in the methods classroom. He further states that methods teachers prefer to provide students with information concerning selection and use of ready-made audiovisuals rather than the preparation of these materials.

In another study, Fagan (1970) analyzed the effectiveness of three different teacher education programs for beginning trade and industrial teachers. The study involved a number of pedagogical factors. He concluded that: (1) added amounts of teacher preparation increase the level of performance, (2) the maximum level of preservice training should be adopted as a minimum preparation time on the basis of interviews and observations and (3) age is not a factor of success for beginning teachers. King (1970) tested the feasibility of teaching a methods course totally or partially by telelecture. Three groups were compared, one group received a traditional lecture discussion, another group received 50 percent traditional lecture and 50 percent telelecture, and a third group received only a telelecture. He concluded that a professional course may be presented with equal results either by lecture or telelecture. Student attitudes were not adversely affected by either course content or method of presentation, and telelecture was more economical in costs and travel time.

Boleratz and East (1968) evaluated the feasibility of providing teachers living and working experiences with disadvantaged persons. After attending seminars plus actually living-in and assuming daily work responsibilities, the participants' test scores showed significant gains on self actualization, and certainty of answers on the disadvantaged and their attitudes towards families unlike their own. Boleratz and East found it was feasible to incorporate these experiences into the home economics teacher education curriculum.

Tuckman (1968) studied 514 male students to determine with whom to use directive or non-directive teaching techniques and in what course organization. It was concluded that teacher education should offer more information about non-directive teaching, should use non-directive and directive methods as they pertain to individual students and that students prefer non-directive teachers in both vocational and general education courses. It was found that vocational students have a more marked preference for non-directive teaching, and that all students earned better grades from non-directive teaching.

Ralstrom (1969) studied teaching practices used by industrial arts teachers in preventing dropouts. The study evaluated teaching practices which have holding power for dropouts. Holding power refers to the capability of a teaching practice to keep students enrolled in school. A group of inner-city and a group of suburban teachers were studied. Seventy-eight teaching practices were identified as holding dropouts and 18 practices were identified as contributing to the dropout problem. It was found that differences existed in the attitudes of the holding power of inner-city and suburban teachers. The investigators recommended that the list of practices should be circulated to all teachers.

Dirks, et al. (1967) studied the possible contribution of the college supervisor to the student teacher during his practice teaching situation. The study involved 454 usable reports of critical incidents which made an apparent difference between success and failure during student teaching. College supervisors were found to assume a judgment-giving role more than any other. It was also found that (1) the supervising teachers behavior seemed equally important to student teachers, and (2) supervising teachers produced the desired effect in the student teachers more often than not. The need for supervisory action occurred most often in the areas of student teacher self-concept, lesson planning, program policies and requirements, and rapport with the supervisor.

Oliver (1967) studied the effectiveness of informational feedback from supervisors and students as a means of improving the teacher image of beginning and experienced teachers. The findings revealed that student feedback produced observable significant differences between those groups receiving feedback and those who did not. Student feedback improved teacher effectiveness while supervisor feedback did not. As a result of the study, Oliver concluded that student feedback during the first 10 years of teaching can be used as a vital method of improving teacher effectiveness.

Bell (1970) indicated that, when compared with traditional forms of teacher preparation, the structuring of teaching into micro-teaching for student teacher techniques resulted in more effective teaching. This structuring appeared successful regardless of variations among student teachers.

Rice and Meckley (1970) evaluated a training program utilizing simulation techniques on supervision and decision-making skills in vocational education. By using four simulated exercises, students were taught basic principles and concepts of effective supervision.

Dillon and Peterson (1971) investigated the patterns of student interaction with agricultural education student teachers through an interaction analysis technique. They found that verbal interactions between teachers and students could be modified by using videotape as a critique device. The investigators' proposal was to change a student teacher's interaction from direct or teacher-centered to indirect or student-centered. They found student teachers became slightly more indirect when they had been videotaped and critiqued.

In a feasibility study, Eailby (1969) compared the effectiveness of direct and videotape observation of classroom teaching and learning. The videotaped group scored significantly higher on an essay test designed to evaluate the teaching situation than the direct observation group. In general, no difference exists between the groups on 18 observational functions. The chief advantage for video observations was that less student time was involved plus less money and travel were needed to provide the evaluation of teaching.

Bobbitt (1969) compared the attitude, degree of knowledge, and preference to teach in a home economics education program designed for employment. The results of the study indicated favorable differences for the graduates who completed the experimental undergraduate course in employment education in regard to their attitudes toward employment emphasis, their knowledge and their teaching preference toward employment in occupational programs. It was recommended that the course should be a part of the undergraduate curriculum.

Vocational educators need to be able to evaluate a student's potential success prior to student teaching, which generally occurs late in the student's college experience. This situation on occasion results in a student completing three or more years in a teacher education major only to find that teaching is not a reasonable possibility. Can potential vocational teachers be identified early in their college experience? Hughes, et al. (1969) studied the relationship of some selected factors and success in student teaching. The study revealed that relationships existed in (1) marital status, (2) fathers attained educational level, (3) the life insurance saleswoman occupation on the *Strong Vocational Interest Blank for Women*, and (4) two personality variables of the *Edwards Personal Preference Schedule*—the autonomy

percentile and exhibition "T scores." Obviously, additional research should be conducted to collect new information on factors related to success in student teaching.

White (1970) conducted an exploratory study to examine the effectiveness of utilizing tele-supervision as compared to face-to-face supervision of student teachers. Tele-supervision involved a conference telephone conversation between the university and the student teacher and cooperating teacher as well as audio tape recordings of evaluation conferences between the student teacher and the cooperating teacher. It was concluded, that tele-supervision was not only feasible but embodies qualities of supervision beyond the face-to-face contact. There appeared to be more self evaluation and less student tension, the supervisor could sample a wider range of teaching experiences, and the cooperating teacher could become more involved in the evaluation.

Adelman (1972) utilized a jury to develop an undergraduate and graduate curriculum model. He found that: (1) a basic group of courses appear with some degree of regularity in each teaching area, (2) certain courses are best adopted to a specific vocational area, (3) present certification requirements are poorly designed to develop any degree of expertise in students, and (4) certification requirements vary greatly between vocational education areas.

Miller (1972) designed a study to determine if a 10 week summer apprenticeship program for prospective vocational teachers will produce a change in attitude and self actualization. He found that apprenticeship programs did elicit a change in attitude and a self actualization program can strengthen the preparation of vocational teachers.

One of the ways to assist vocational teachers with their wide range of teaching responsibilities is the use of teacher aides. Relatively few studies in vocational education have explored the role and competencies required of teacher aides nor the final outcome of student performance as a result of their help.

Durkee (1970) surveyed teachers, school administrators, teacher educators, and state supervisors of agricultural education across the United States to determine if a need exists for teacher aides. Approximately 80 percent of those surveyed indicated a need did exist. Slightly over six percent reported that teacher aides were already employed in programs of vocational agriculture. Durkee concluded that teacher aides could increase the rate of adoption of innovative practices of farmers. He further indicated a number of commonalities may be found in preparing aides for employment at various grade levels.

Pratzner and Hanson (1969) studied the relative effectiveness of two ways of structuring and presenting 2[illegible] clock hours of preservice and initial in-service vocational-industrial teacher education lessons by comparing (1) an integrated lecture-discussion course presented by a

vocational teacher educator, and (2) a packaged course consisting of 16 mm sound film presentations followed by group discussions with related guides and materials. Subjects in the film-discussion groups were consistent and statistically superior performance on the criterion tests; however, these differences were not reported as being significant. The researches further indicated that film-discussion appears to be a more efficient method of instruction since it provides consistency of presentation with a degree of adaptability and flexibility and possibly some economic and convenience advantages.

The California State Colleges at Fresno and Hayward (*Operation Fair . . .*, 1969) were designated as project "centers" for an experimental teacher education program leading to more effective preparation for teaching disadvantaged children and youth. Modifications of the original proposal yielded an experimental teacher education program with its roots embedded in traditional teacher education programs in four traditional concerns: (1) teacher candidate selection, (2) developmental curriculum, (3) community involvement, and (4) school-district/college partnership. The researchers analyzed and studied these four areas for a three year period and gathered supportive data for their recommendations. Among their suggestions were: (1) screening of teacher candidates is a must, (2) more racial minority males must be attracted to teaching, (3) educational foundations courses should be integrated with the experience centered courses, (4) all teacher candidates should be sent out for an in-depth community experience and should live in the community before, during and after student teaching, and (5) a more intensive working relationship is needed between school district personnel and teacher educators to prevent discontinuity between preservice and in-service education.

Major (1969) studied the science requirements of home economics education majors. She concluded that: (1) most teacher preparation institutions required chemistry for undergraduates, (2) chemistry was useful but not directly applicable to classroom teaching, and (3) more emphasis on the behavioral sciences was desired by home economics majors.

Juergenson (1967) studied two approaches to teacher education. His investigation centered on four student teachers; two using the inquiry or problem solving method, and two using team teaching.

Ferguson (1967) compared the project method of classroom instruction with the cooperative method. He found that (1) the project method stimulated involvement with other teachers—primarily guidance personnel, (2) classes with large enrollments cause more problems with the project method, (3) project method teachers reported that more preparation time was needed, (4) facilities are not very important, and (5) teacher workshops are helpful in adapting to new methods.

Cesta (1970) evaluated a program in which teachers were allowed to work in business firms to improve their teaching. The project director reported that participants benefited considerably from the experience and, in turn improved their teaching methods.

Hoerner (1969) investigated ways to improve preservice trade and industrial practice teaching sessions. The students were evaluated on three variables: (1) receiving or not receiving video feedback, (2) teaching two 10-minute lessons or four five-minute lessons, and (3) teaching peers or high school students. No significant differences were noted in gain of teaching skill or confidence; however, 90 percent of the participants preferred video feedback.

Henri and Whiteford (1972) examined the problem of providing supervision of clinical experiences for student teachers of high quality with less time and cost involved. The study was designed to explore possible alternatives to the usual face-to-face supervision by utilizing audio tapes of classroom teaching and teleconferences. The study was conducted over three academic quarters and involved 29 student teachers and supervising teachers in the experimental group and 39 student teachers and supervising teachers in the control group. The university supervisor made one on-site visit to the student teaching center and then had the student teacher audio tape record a lesson and submit the lesson plan in lieu of a second visit. A telephone hook-up provided the university supervisor an opportunity to confer with the student teacher and the supervising teacher. Henri and Whiteford did not attempt to draw inferences from the data but a subjective analysis revealed that the university supervisers were most favorable followed by supervising teachers and student teachers respectively. They also indicated that the teleconference did not improve the lesson plans written nor did it have an impact upon classroom interaction patterns. The teleconference did save both time and money.

Guidance Responsibilities. Throughout the history of education, vocational teachers have had unusual opportunities to develop close personal relationships with their students. They have frequently visited with students and parents in their homes, and have had the opportunity to help students secure their first jobs. Consequently, vocational teachers now have a responsibility to do more than equip students with some type of subject matter skill. Job placement is rapidly becoming a stated responsibility of the school. How are teachers being prepared for their guidance responsibilities? It seems an appropriate question to ask may be "What type of guidance competencies should teachers possess?" and "Do vocational teachers have an influence on their students?"

If vocational teachers are to function in advising and guiding capacities, it may be of value to determine how they perceive their roles. Sutker, et al. (1967) analyzed the roles and the role conflicts of vocational teachers. The study revealed substantial differences in attributes between teachers in different fields of vocational education. Trade and industrial teachers especially had characteristics that tended to set them apart. It was further noted that job satisfaction was highest for distributive education and lowest for technical teachers. A wide range of disparities exist as to what vocational teachers do and should do in relation to 70 specified activities as judged by vocational and non-vocational teachers and administrators. Teachers generally feel only local administrators and state board personnel have the right to evaluate their activities only.

Egermeier (1968) studied the role and role conflicts of vocational teachers. An unstructured interview technique was used with 1,502 vocational teachers, students, other teachers, and administrators in 82 Oklahoma schools. It was noted through the interviews that counselors contribute to the ambiguity of the vocational teacher role through disparities between their own and teacher cognitions of what is and ought to be done by teachers; through disparities in the norms and expectations which they hold for the teacher.

In-service Education

Harrington and Doty (1971) analyzed four feedback and analysis techniques in conjunction with micro-teaching and video recording in an interview teacher education program for post-secondary instructors. The feedback methods were self review, fellow instructor review, student review, and teacher educator review. No significant differences were found among the groups in the performance of teachers. Consequently, each method was considered an effective and feasible way to improve and select teaching skills for in-service teacher education.

Doty and Cotrell (1971) studied the feasibility and applicability of micro-teaching and video recording on in-service methods courses. They found micro-teaching with or without video recordings to be an effective teacher education tool in the in-service methods course. They also recommended that high school students participate in the micro-teaching sessions in order to make the experience more realistic for the teacher attempting to improve his or her teaching performance.

Cotrell and Doty (1971) analyzed the effectiveness of the following types of feedback, (1) face-to-face supervision with video tape feedback, (2) remote supervision via video tape and sound track with teacher education problems, and (3) remote supervision via video feedback augmented by instrumental models for self comparison. The three teacher education

feedback techniques each have similar effects in changing teachers performance in demonstrating a manipulative skill. Cotrell and Doty stated that the techniques are feasible and with modifications are useful for in-service programs.

Cotrell and Doty (1971) compared the merits of educational feedback techniques to improve teaching skill performance. They used (1) face-to-face conference, (2) face-to-face conference plus video tapes, (3) face-to-face conference with four day delay, and (4) remote feedback via second sound track on video tape with seven day delay. They found no one teacher education feedback group performed significantly better. They concluded that micro-teaching may be more beneficial than the particular feedback technique used with it. Cotrell and Doty (1971) also measured the effectiveness of feedback in the teaching skill of introducing a lesson. They reported that the three feedback techniques—(1) face-to-face conference, (2) face-to-face conference plus video tape feedback and (3) remote audio with video feedback are equally effective and all are feasible for on-going teacher education programs. Doty and Cotrell tested the feasibility of using micro-teaching and video-taped feedback in a distributive education methods class. Their analysis provided no significant statistical differences; however, subjectively speaking they found video feedback was a useful technique.

Cameron (1969) evaluated the effectiveness of three remote techniques of in-service teacher education for three selected teaching skills. Three treatment groups were evaluated after all participants had viewed a five-minute model teaching performance with each teacher making a five minute video tape of his own. The treatments consisted of utilizing video phone feedback, video mail feedback, and video self-evaluation. No significant differences in performance nor expressed level of satisfaction with the three techniques were observed. In another study, Cameron and Cotrell (1970) assessed the use of micro-teaching and video recording as a means of facilitating in-service education to teachers in isolated circumstances. The same treatment groups were used as in the previous study. Again, no difference in the teacher performance or teacher satisfaction in any of the treatment groups was shown. Consequently, it was concluded that remote techniques do work for in-service education and help beginning teachers improve their teaching performance.

In-service education is becoming a very critical aspect of vocational teacher education. Technological changes as well as the employment of non-certified teachers tends to increase the demand and need for in-service vocational teacher education. In a study to determine the in-service needs of teachers, Crabtree and Hughes (1969) found that teachers were not completely prepared after four years of college. They studied 838 Missouri home economics teachers and found that the present programs were not meeting their needs. According to Crabtree and Hughes: (1) teachers want graduate credit and courses of short duration, (2) teachers in large schools are interested in in-service programs, (3) schools need to provide

more financial rewards for teachers to become interested, (4) professional libraries should be developed in schools to assist teachers, and (5) teacher attitudes toward in-service improve with experience.

Harder (1970) in a doctoral study, examined the differences in teaching effectiveness in two types of in-service education programs for beginning industrial arts teachers. A teacher assessment inventory and a supervisor's observation instrument was used to assess three groups. Harder concluded that teacher effectiveness in the two groups that received either a four day orientation institute, or two supervisory visits and monthly information mailing, was greater than for the control group.

Hyder (1971) in a doctoral study, focused on the effectiveness of summer workshops for training teachers. His study involved 154 participants in a 1970 Industrial Arts Curriculum Project (IACP) for construction teachers. Hyder's findings show a significant increase in the teachers' knowledge of subject matter content and processes and no significant difference in job satisfaction between those who elected to teach the project curriculum and those who did not. He concluded that the workshop scheme was a relatively successful teaching technique.

Pearce (1967) studied the effectiveness of utilizing summer institutes for fluid power education for vocational teachers. An analysis of the summer institute using pre- and post-tests revealed a considerable increase in achievement. He concluded that the summer was an effective time to conduct institutes because it offers a controlled environment and an effective means of bringing teachers and educational, industrial, and technical authorities together.

Knoll and Stephens (1968) investigated the in-service program for vocational teachers in Utah. Their findings revealed that a systematic method of scheduling is needed to coordinate the entire program. They further reported that the present program should: (1) place more emphasis on doing rather than telling, (2) give teachers financial assistance to encourage them to participate, (3) have teachers encourage work experience, and (4) incorporate micro teaching into the in-service program.

Meyer (1967) studied the effectiveness of providing directed occupational experience for marketing and distribution teachers. He found that after each teacher spent four weeks—two eight hour day periods were spent in two different business firms—participants improved their marketing knowledge and could communicate a practical understanding of their knowledge. They could also communicate the psychological and sociological dimensions of the job, and established excellent community relations as a result of their experience.

Chaubey and Woodin (1969) studied factors which had an important influence on the quality of teaching in vocational agriculture. They listed such factors as student interest and capacities, type of occupational experience program, modern curriculum materials and

teaching tools, and preparation time as important factors. Teachers listed their needs as improved in-service education programs in curriculum and teaching unit development, and better administrative policies. They further reported that teachers are using some of the new hardware but not all of the resources available.

Mannebach (1970) analyzed the effectiveness of a four-week experimental program in which teachers were placed on jobs for occupational experience. He found that junior college teachers gained significantly more knowledge as a result of their experience and that businessmen felt teachers should have spent more time in the business firm. Mannebach recommended that short term experiences be offered so teachers are able to keep current in the knowledges and skills needed to prepare students for agricultural occupations.

Cragun (1970) completed a study on patterns for preparing agriculture teachers for post-secondary positions to determine the most desired preparation for persons planning to teach technical agriculture. He concluded that persons seeking these positions should have: (1) a bachelors degree in agricultural education and a masters degree in an area of specialization, and (2) work experience in their area of specialization and some previous teaching experience in vocational agriculture.

Henry (1971) studied the effects of an in-service program which would cause student teachers of vocational agriculture to adopt an indirect style of teaching and, once adopted, would continue to be used by the student teachers after they enter the teaching profession. He found that an in-service program can be developed which will alter teaching styles toward a more indirect approach and that student teachers do not change teaching styles from the beginning of student teaching to the first four months of beginning teaching.

Klabenes (1971) assessed the results of an in-service program for post-secondary vocational-technical education instructors directed towards modifying classroom teaching behavior. The intent of his study was to increase the instructor's skill in recognizing component aspects of classroom instruction. Utilizing video tape, the investigators appraisal, and Roberson's "Self Appraisal Instrument," the investigator found that instructors did exhibit significant changes in their classroom teaching behaviors. He further found that teachers did utilize more verbal expressions.

Beed (1970) studied the policies and procedures for initiating and conducting internship programs for industrial-technical teacher education departments. He developed a list of 20 guidelines for an internship program and concluded that the intern program was well received by industry as evidenced by the number of work stations offered.

Brown (1969) evaluated the effects of an in-service education program on 40 vocational agriculture teachers. He found improved teacher subject matter competence but the program had no effect on student learning.

Larson (1967) attempted to secure information from vocational educators in Colorado to determine their needs, desires, and willingness to participate in institutes, workshops, and updating seminars. He found that there was a high interest in updating activities, one-week institutes in June and July were the most desirable times, and about half the interest was in technical subject matter and half in pedagogical topics.

Hemp (1967) evaluated a summer institute for ornamental horticulture teachers. Some of his major conclusions were that (1) multi-state institutes are effective means of bringing about change, (2) a method to carefully select participants who can develop programs is crucial, and (3) teachers seeking retraining need a sponsored job internship in business firms.

Hughes, et al. (1969) evaluated the need for in-service education for Missouri home economics teachers and if the needs of home economics teachers were affected by educational background, teaching experience or other personal characteristics. Most teachers felt that the present program was not meeting their needs and most said they would participate. They also report that most teachers feel that in-service programs should be offered for graduate credit.

Conclusions and Implications. In reviewing the literature, it is evident that the preservice and in-service vocational teacher education category of the paradigm has received the attention of a number of researchers in vocational education. It is also apparent in reflecting on the research that particular areas within preservice and in-service teacher preparation have received considerable emphasis. The use of video taping techniques in supplying both preservice and in-service teachers with feedback relating to their teaching performance is an area in which a considerable amount of study has been made. Educators have attempted to determine which preservice and in-service education activities provide the perspective of a practicing teacher with effective preparation. Research in the preservice and in-service areas of teacher education pedagogy seemed to command the greatest amount of attention. Research in the areas of teaching methods, curriculum planning, and student teaching were the key aspects examined.

In preservice teacher education, the existing literature seems to focus primarily on the use of identified competencies, while the use of feedback techniques received the greatest amount of attention in the in-service section. Studies in the preservice section touched on (1) the use of teaching methodology, (2) student teaching, (3) micro-teaching, (4) internships for teachers during the summer months, (5) internships at other periods of time as a part of the preparation program, and (6) the teacher education curriculum and courses of student teacher supervision. It seems evident that a rather wide range of problem areas in the preservice preparation program have received the attention of researchers. It is apparent that

the development of performance or competency-based preservice preparation programs for vocational teachers is somewhat deficient. Possibly preparation programs are underway but the research aspect has not yet been reported. The use of simulation in the preparation of vocational teachers appears to also be an area lacking research investigation.

A summary of the research related to in-service teacher education reveals that considerable effort has been made in the use of video recording and feedback techniques to assist teachers in improving their instruction. The studies of Cotrell and Doty (1971), Cameron (1969), and Harrington and Doty (1971) all provide excellent insights into the use and effectiveness of feedback techniques. A number of research efforts have addressed the issues of determining needs and the subsequent arrangement of institutes, workshops, seminars, courses, work experience, and internships.

It is apparent from reviewing the research that investigations have provided some useful information for the planning and conducting of in-service programs. The study of Klabenes (1971) has apparently touched some key dimensions for the improvement of instruction in that teachers did make significant changes in their classroom teaching behaviors. The studies of Larson (1967), Hemp (1967), Mannebach (1970), Pearce (1967), and Hyder (1971) revealed that a variety of workshops and institutes during the summer months were useful times for in-service preparation programs.

The studies relating to in-service teacher education seem to imply that improvement of instruction can occur with the use of feedback techniques and teacher self-appraisal. It seems evident that the summer months provide an effective time for scheduling in-service educational programs for vocational teachers.

Advising And/Or Guidance Of Vocational Teachers

The role and function of teacher educators advising and guiding students as they prepare for teaching careers seems to have received very minimal attention. There are no studies presented in this review on the topic of advising and guiding vocational teachers during their preparation time. It may be appropriate to simply raise some questions for future research efforts.

Are prospective teachers simply required to complete a number of courses in the technical and pedagogical areas? Should students be required to take certain courses or should they be free to choose their own program? What types of diagnostic instruments or techniques may be used to determine the strengths and weaknesses which a student brings initially to a teacher preparation program? Is it important to provide personal advice

regarding coursework and/or job placement to prospective teachers? Should some type of screening device be used to determine who is best suited to become a vocational teacher?

These questions along with other factors could provide teacher educators with the necessary background to give prospective teachers sound advice concerning teaching in each vocational field.

EVALUATION OF VOCATIONAL TEACHER EDUCATION PROGRAMS

Vocational teacher educators and state department of education personnel frequently conduct research studies evaluating secondary adult or post-secondary programs. But, how effective are vocational teacher education programs? Are prospective and in-service teachers really prepared to interact with and guide students? What is the quality of the product being produced by vocational teacher education departments? Have vocational teacher educators really examined their students? What type of performance is being made by first-year teachers? What are the problems of the beginning teacher? Are vocational teacher educators guilty of preparing teachers and then forgetting them once they leave the college or university scene?

Hein (1969) surveyed 128 former industrial arts majors of Colorado State University. He found that (1) approximately one-third of the graduates were not teaching, (2) salaries of those graduates employed by industry were generally no higher than teachers' salaries, (3) almost one-half of the 99 respondents had obtained a second degree, (4) fewer were required to teach courses outside their field than in a previous study, and (5) teachers sponsorship of extracurricular activities for students had not changed from previous studies. Finally, woodworking and drawing remain the two most popular courses taken in college.

Prull and Very (1968) evaluated the undergraduate vocational teacher preparation programs in Rhode Island. They found that (1) the state needs were being fulfilled in vocational business teacher education except for preparation in distributive business education; (2) agricultural education had supplied students with all the necessary skills in production agriculture, however, additional emphasis was needed in non-farm businesses, conservation, and food processing; (3) home economics produced a sufficient number of well trained teachers; (4) trade and industrial education had not kept pace with developments in industry; and (5) actual practice in the teachers occupational field would be helpful.

Conley (1968) studied a number of factors in relation to the effectiveness of day trade teachers. He found that 63 percent of the local school administrators felt it took two years for these teachers to become effective.

Although Koble (1971) did not study teacher education programs directly, he evaluated teachers, including vocational teachers, and his study has implications for vocational teacher education. He found that secondary principals did not know their teachers well enough to separately predict attitude, morale and personality. He further noted that older teachers had higher overall morale scores and that vocational teachers appeared to be more product or skill oriented than the social studies and guidance personnel.

Kaisershot (1970) evaluated the Business Teacher Education Department at the University of Nebraska to determine the effectiveness of the undergraduate program. As a result of his study Kaisershot recommended (1) expanding the activities of student teaching to closer approximate a regular teaching position, and (2) providing more observational opportunities of experienced business teachers.

Anderson (1969), studied the professional attitudes of active teachers and those who leave the field of industrial education. He noted that the reasons out-mobiles gave for leaving the profession were: (1) salary, (2) inadequate commitment, (3) falseness of the school situation, and (4) insecurity of employment. The out-mobiles indicated they would be employed in sales, real estate, construction and personal business. They enjoyed their role, saw little opportunity for advancement, and assessed themselves as better than average teachers.

Once teachers are on the job, how they blend into the school scene is of key importance in teaching. Kaiser (1968) examined the role theory concepts between vocational teachers, state supervisory personnel and local school administrators. He found that: (1) school administrators and state supervisors differ more in their evaluation of vocational agriculture teacher behavior than of trade and industrial teacher behavior, (2) vocational agriculture teachers and their administrators differ more in perception of role behavior than trade and industrial teachers and their administrators, and (3) state supervisory personnel in general hold rigorous expectations for vocational teachers.

Johnson (1968), in a three phase study, examined the selection and preparation of home economics teachers in one phase. She found that most of the teachers sampled had a baccalaureate degree, at least five years teaching experience, plus other work experience.

Russell (1972) prepared an instrument to measure the change orientation of vocational teachers. The differences in early adaptors and laggards were examined. The instrument

has value by being able to determine the change orientation concept in: (1) formulating innovation diffusion strategies, and (2) investigating dimensions of innovative behavior among teachers.

Kerwood (1967) developed an instrument to guide a self-evaluation of a teacher education program. He developed criteria and indicators for evaluating the states total program of vocational teacher education and validated an instrument so that occupational service areas could be analyzed. He concluded that head state supervisors and head teachers are in general agreement on their ratings of indicators even when analyzed by occupational areas. He recommends that in-service programs be redesigned and conducted for state staffs desiring evaluation of the teacher education programs. He further indicates instruments need to be developed to test and evaluate programs unique to vocational teachers. The instrument can serve as a guide for vocational teacher educators planning to evaluate their programs.

Conclusions and Implications. In summarizing and attempting to draw some conclusions from this section of the review, it should be noted that studies were reported which reflect a measure of accountability in vocational teacher education. A pursual of the various categories of the paradigm reveals that accountability for a quality product has been examined in a number of the studies reported. Questions such as, how good are vocational teachers, administrators, and leaders who have largely been the products of vocational teacher education programs.

Hein (1969) in a follow-up study, found one-third of the graduates were not teaching. The study by Hein may have implications for other institutions to continually follow up and examine their graduates (both graduate, undergraduate and those who simply take courses to qualify for a teaching position). The study of Prull and Very (1968) indicated areas of weakness and satisfaction in various vocational teacher preparation programs. The study by Kaisershot (1970) placed emphasis on expanding and improving the student teaching program. Kerwood (1967) developed an instrument to guide a teacher education department in making a self evaluation of its teacher education program.

The studies in this category imply that follow-up studies of all graduates of vocational teacher education programs can provide meaningful data for future program change. Obviously, this type of study needs to be on a continuous schedule providing meaningful data. The use of state supervisory staff and a self evaluation instrument can provide useful information for course and curriculum planning in vocational teacher education programs.

SUMMARY

The paradigm outlining eight categories of vocational teacher education has provided the basis for this review of the state-of-the-art in vocational teacher education. Bjorkquist, et al. (1968) suggested that vocational educators must know where we are and establish direction in order to organize a basis for meaningful studies. Davis and Trout (1971) proposed that a teacher education model needs to stress that the teacher is both a manager of resources and an effective specialist in a prescribed area. The categories proposed earlier in this review by the paradigm included: (1) competencies required of teachers, (2) sources of vocational teachers, (3) recruitment of vocational teachers, (4) vocational teacher preparation programs–preservice–in-service, (5) advising and guiding vocational teachers, and (6) evaluation of vocational teacher education programs. These categories have provided a meaningful theoretical framework for organizing the review.

It should be noted that during the past decade, research efforts in vocational education have indeed encompassed many areas. Research and development has come-of-age in vocational education. Numerous studies though have not focused directly on vocational teacher education during these years (consequently, they are not identified and reported in this review), but have had real implications for vocational teacher education. It would be a near impossibility to examine each research study in vocational education and draw out that section or two that had implications and applications for vocational teacher education. In examining the studies reported in this review, it may be noted that research has quite frequently been the result of doctoral dissertations or graduate research fellows. Teacher educators are undoubtedly giving first priority to teaching responsibilities and research efforts have a secondary claim for time. It is also possible that whenever a teacher educator has an opportunity to conduct research the broad field of vocational education bids for his attention and consequently research needs in vocational teacher education tend to go unheeded. Until a relatively recent thrust in using micro-teaching and video taped feedback techniques along with the identification of teacher competencies, research in vocational teacher education has not been particularly attractive nor received much concerted effort.

In assessing the merits of the research reviewed, it is the opinion of the reviewer that studies ranged from very explicit experimental design with restricted and exacting implications to highly generalized descriptive studies with rather broad and general implications. It appears that studies emerging from a vocational research center or a research coordinating unit, involving a team of investigators, may have had the benefit of more expertise in designing and analyzing the research effort. This is not to discredit any of the research reported because each study has offered usable alternatives for vocational teacher preparation. Undoubtedly there are a number of useful and valuable research efforts that are not included in this review.

In each section of this review a brief summary, conclusions and implications section was included. This final summary will attempt to re-emphasize the key findings reported in each section. In section one of this report, studies were reviewed which centered on the competencies required of vocational teachers. The studies which emerge in this section are the 237 competencies or performance areas identified by Cotrell (1971) common for teachers in a majority of vocational service areas. Obviously the list of competencies has application and commonalities in a number of vocational teacher education service areas. It should also be pointed out that the Cotrell (1971) study revealed that each vocational area also has a number of very unique competencies or performance areas. The Courtney and Halfin (1969) study in trade and industrial education provided a useful basis for evaluating competencies required of trade and industrial teachers. The 130 competencies in their study provided teacher educators with a useful basis for launching program changes. Crawford (1967) identified 96 items that should be included in a distributive education teacher education curriculum. Heitzman (1968), Miller (1971), Nattress (1967), Kruskop (1966), and Mitschele (1965) each studied competencies needed by vocational teachers in the pedagogical and technical subject matter areas. The literature seems to indicate that competencies in the education pedagogy are being identified, however, somewhat limited efforts are being made to identify the technical subject matter competencies so vital to vocational teachers in each service area. It seems evident from these studies that vocational teacher educators must take a critical look at the competencies or performance areas required of teachers in each service area and then design programs so that teachers and prospective teachers can become proficient performers.

The review of research on the sources and recruitment of vocational teachers revealed a variety of research efforts but no real concentration of studies which provide information on a number of target populations. The Hensel studies (1967a,b) revealed that military personnel may serve as a real potential source of vocational teachers. Runnalls (1970) examined the potential use of personnel retired from business and industry as a source of vocational teachers. Pasour (1967) analyzed the nature of the student population in agricultural education at North Carolina State University and found (1) students came from a limited number of counties, (2) distance was not a factor and, (3) the economic and occupational status of the family did influence their attendance and enrollment in agricultural education. It seems the opportunity for researching potential sources of vocational teachers remains a fairly unexplored area. A number of service areas continue to experience teacher shortages on a nationwide basis. Hence, new and unique recruitment schemes could prove useful in providing a greater supply of well qualified vocational teachers for some vocational service areas that have continually faced teacher shortages.

In summarizing the studies examined in the second broad category of the paradigm, research in vocational teacher preparation in the preservice, in-service and guidance and

counseling of teachers section, has commanded some degree of attention by researchers. It may be noted that the competencies identified in the previously reported research studies become operational in this category. Consequently, the teacher preparation programs that have been developed around the competencies identified are reported in this section.

Studies by Peterson (1972), and Bikkie, et al. (1972) were based on an evaluation of competency based on teacher education programs already in use in Nebraska and Minnesota. Improved beginning teacher performance and highly improved student teacher satisfactions were highlights reported in these studies.

Studies by Hoerner et al. (1971), Chase, et al. (1971), and White (1970) revealed a number of research efforts that focused primarily on the use of micro-teaching techniques along with various types of feedback techniques. A number of investigations dealt with teaching methodology and work experience programs. The research efforts of Harrington and Doty (1971), Doty and Cotrell (1971), and Cotrell and Doty (1971) provided information on feedback techniques that improved the teaching performance. Crabtree and Hughes (1969) found that even after four years of college, teachers were not totally prepared for the teaching task. Hyder (1971), Pearce (1967), and Knoll and Stephens (1968) all investigated ways and means of scheduling in-service teacher education programs. They found that the summer months provided a favorable time for scheduling in-service programs for teachers. Klabenes (1971) provided a useful study by using a self analysis technique for improving the teaching performance.

In the area of advising and guiding vocational student teachers, no research studies were reviewed and consequently this aspect of vocational teacher education needs examination. Some questions that need exploration may be (1) what diagnostic instruments or techniques may be used to help determine the strengths or weaknesses a prospective teacher may possess or need when enrolling in a teacher preparation program? (Seems unfortunate for a tradesman to leave a job in industry for a teaching position only to find that he is not a teacher. Unfortunately college students complete a four year degree program only to find teaching is not to their liking). (2) Should students be required to take certain courses or should they be free to enroll in courses that really interest them? Answers to these and similar questions could provide vocational teacher educators with useful advising and guidance techniques.

The third broad category outlined in the paradigm was the evaluation of vocational teacher education programs. Again a limited number of studies are reported in this section. Most vocational teacher preparation programs seemingly undergo periodic evaluations by various national certifying or review teams. Are those self-studies along with a visit of outside review team members of lasting value to a program? Kerwood (1967) developed a self-evaluation device to guide teacher education departments in analyzing their programs.

It is evident from this assessment of the state-of-the-art in vocational teacher education that research efforts must focus on (1) an analysis of competencies needed within the broad and specific fields of vocational teacher education, (2) an assessment of potential sources of teachers, (3) the recruitment of vocational teachers, (4) teacher preparation programs that address themselves to teaching methods and organization of programs (both preservice and in-service), (5) providing vocational teacher educators with guidelines for guiding and counseling students and, finally, (6) an evaluation of the effectiveness of vocational teacher education programs.

Implications and Needed Research

Crucial areas for research in vocational teacher education, that merit additional attention include the following:

1) Teacher requirements need to be continually examined for appropriateness, flexibility and scope. A continual evaluation of current teacher competencies, both the educational pedagogy and the technical subject matter areas for each vocational service area must receive greater attention. Each vocational service area must identify their own unique needs. It is evident and encouraging to note that some vocational service fields appear to have competency or performance area research well underway.

2) The issue of unique and productive recruitment of vocational teachers is another area that needs further researching. A shortage of teachers continually exists in some vocational fields and it is time to explore reasons why and design successful means of recruiting teachers. The question of recruitment immediately raises the question of sources of potential vocational teachers. The reasons people enter and remain in vocational teaching positions must rank high on the priority list for research in this section. Obviously a continual shortage of teachers may be a valuable bargaining position for those who are in but do little in terms of long range effects for the service area. Traditional schemes for attracting teachers into the profession have obviously not proven to be effective. Hence, the recruitment and selection of vocational teachers requires the attention of a series of research studies.

3) In the examination of research in the area of teaching methods, it is apparent that experimental studies will reveal only minimal assistance in evaluating the effectiveness of the methods. Studies of teaching methods will likely show no significant differences or significant differents dependent largely upon the

variables. This should not infer that teacher educators should abandon seeking unique methodology for vocational education. The use of teaching methods should be researched more fully and must closely relate to the competencies identified. Identifying competencies is one dimension of research but of at least equal importance is the converting of the competencies into a meaningful teaching mode. The methodology used to prepare vocational teachers is the methodology those teachers will perform in the field.

4) The aspect of guiding and counseling vocational teachers by teacher educators has received very minimal attention. In planning programs for prospective teachers, it would seem that any diagnostic, achievement or evaluative measures that may be used to analyze and evaluate the students' capabilities would be extremely useful to a teacher educator. Once an individual plans and invests in a teaching career, when he or she may not possess the essential qualities, seems to be a misuse of time and resources for the student and the teacher educator.

5) The evaluation of teacher education programs should rate as a high priority in every institution preparing vocational teachers. A self-evaluation is most useful but in the fast moving pace of vocational education, the teacher education phase cannot afford to wait every five or 10 years to evaluate itself and its product. Follow-up studies of graduates from the standpoint of employment, performance on the job, progress on the job and their productive relationships with their students must be an annual and continual research effort. How immediately accountable can teacher education programs become? Other research questions that must be asked focus on such items as what are the needs of beginning teachers? What are the needs of experienced teachers? In a day of performance based teacher education and accountability all aspects of education, research efforts in evaluation are crucial for the future.

6) Future reviews of vocational teacher education may be more comprehensive and useful if they are confined to the service areas. In the past decade, research in vocational education has "come of age". However, research in vocational teacher education is limited and is not easily generalized to the field. Consequently, future reviews should focus solely on each area with a culmination in a single document.

7) Research in vocational teacher education needs more of a regional and national thrust. In the critical development of performance and/or competency based teacher education, service areas ought to be working together to identify competencies. Service areas should also be working together on a regional basis to develop the competencies unique to each service area.

8) Researchers should concentrate their research effort in the specific areas outlined in the paradigm. At best the research appears piecemeal and without reason or order. Hopefully the crucial areas outlined in the paradigm will find research interest emerging. It seems evident that research efforts should be planned by departments and/or vocational divisions within the universities and colleges. A systematic approach to solving the wide range of problems is an essential first step for researchers. The days of haphazard research are likely over, it is now time to examine teacher education through well conceived research efforts. Research efforts that resulted in a package of findings made a real contribution to this review and hopefully would become an encouragement to future research to pursue areas in depth.

9) Teacher educators ought to be focusing more of their research effort on their own programs. It may be quite attractive to analyze administrative and statewide vocational needs. However, it may be well to also maintain a portion of research effort directed at the teacher education program itself. Moss (1967) indicated that vocational teacher education was still being operated on the basis of tradition, "conventional wisdom", and personal experience. Hopefully, the future of vocational teacher education can move forward on some well founded research efforts.

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